

EXHIBIT 1

Eric Scott Thompson

From: Bob Marsh <bobm@polytechinc.com>
Sent: Tuesday, August 30, 2016 4:00 PM
To: Alfieri, Richard
Cc: Chuck Drost; Bonnie Peterson; Tom Yebernetsky; Clementi, Frank; 'cflynn@paramountdie.com'
Subject: RE: PAFS Foam Question

Rich,

We use several foam suppliers interchangeably for PAF. They all meet our performance expectations. I would not be surprised to find that the samples tested came from several sources and demonstrated analytical differences like what was found.

Best Regards,
BobM

From: Alfieri, Richard [mailto:rich.alfieri@philips.com]
Sent: Tuesday, August 30, 2016 3:31 PM
To: Bob Marsh
Cc: Chuck Drost; Bonnie Peterson; Tom Yebernetsky; Clementi, Frank; 'cflynn@paramountdie.com'
Subject: RE: PAFS Foam Question

Bob,

We received PAF die cut samples of our parts from Paramount Die recently.

We plan an accelerated life test to compare the humidity resistance of PAF and PAFS foams. During the initial inspection at the lab, they identified differences in the PAF foam supplied.

Please review the attached file for a brief description of the differences. Is this common to see differences between batches and thicknesses?

Rich

Rich Alfieri
Senior Staff Mechanical Engineer
Core Technology Research
Sleep & Respiratory Care
Philips Home Healthcare Solutions
1740 Golden Mile Highway
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724-387-5693
rich.alfieri@philips.com

From: Bob Marsh [<mailto:bobm@polytechinc.com>]
Sent: Friday, August 05, 2016 9:49 AM
To: Alfieri, Richard <rich.alfieri@philips.com>
Cc: Chuck Drost <chuck@polytechinc.com>; Bonnie Peterson <bonnie@polytechinc.com>; Tom Yebernetsky <TYebernetsky@brandonsales.com>; Clementi, Frank <frank.clementi@philips.com>
Subject: RE: PAFS Foam Question

Rich,

Chuck already relayed that the only change to the composite was indeed the PSA. That would not contribute to the foam degradation that you are seeing.

The operating temperature high limit is around 225 F continuous. Continuous exposure to this temperature will eventually break down the foam. I do not have an estimation of the lifespan at that temperature, but we were given the life to be 10 years at 80 F and 95% RH. It was also given to us that there was no significant decrease in tensile or elongation after 5 hours of steam autoclaving at 121°C (250°F) per ASTM D3574-91, Test J.

I will ask for any information our suppliers might have for the 40 C and high humidity you asked about. My estimation is that the composite is being exposed to high heat and/or harsh chemicals to cause the degradation shown. We use PMF (melamine foam) for high temperature and chemical exposure acoustical absorption. Would that be of interest to you?

Best Regards,
BobM

From: Alfieri, Richard [<mailto:rich.alfieri@philips.com>]
Sent: Thursday, August 04, 2016 1:42 PM
To: Bob Marsh; Chuck Drost
Cc: Bonnie Peterson; Tom Yebernetsky; Clementi, Frank
Subject: RE: PAFS Foam Question

Bob/Chuck,

Some time ago we discussed the information below regarding degradation of foam in our units. There is still activity around this and we have a couple more questions that I hope you can help with.

1. In our Trilogy unit, we made a change from PAFS-038-BUA3 to PAFS-038-BUL4. I feel this was a change to the adhesive only. Is that correct? Would this have any impact on the life of the foam?
2. What are the temperature/humidity limits of the PAFS foam?
3. Have long term tests ever been performed at high temperature (40 C) and/or humidity levels?

Thanks,

Rich

From: Alfieri, Richard [<mailto:rich.alfieri@philips.com>]
Sent: Friday, October 30, 2015 11:54 AM
To: Bob Marsh
Cc: Bonnie Peterson; Chuck Drost; Tom Yebernetsky
Subject: RE: Re:PAFS Foam Question

Bob,

It is in the inlet airpath. It should be just exposed to room air during operation.

I have only seen the photo attached. They did mention that bits of foam have broken away and are pulled into the device.

Rich

From: Bob Marsh [<mailto:bobm@polytechinc.com>]
Sent: Friday, October 30, 2015 11:41 AM
To: Alfieri, Richard <rich.alfieri@philips.com>
Cc: Bonnie Peterson <bonnie@polytechinc.com>; Chuck Drost <chuck@polytechinc.com>; Tom Yebernetsky <TYebernetsky@brandonsales.com>
Subject: RE: Re:PAFS Foam Question

Rich,

I have not seen this kind of degradation before. It looks like the BU film facing is mostly gone, right?

Is this oriented above a motor/blower? Is it in contact? Does the motor/blower run hot?
or
Is it in the air path? Is it humidified air?

I have asked our foam supplier if they can give us any possible causes.

We will get back to you soon.

Best Regards,
BobM

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From: Tom Yebernetsky [<mailto:TYebernetsky@brandonsales.com>]
Sent: Friday, October 30, 2015 11:17 AM
To: Alfieri, Richard
Cc: Bonnie Peterson; Chuck Drost; Bob Marsh
Subject: Re:PAFS Foam Question

Rich,

Carl retired and I am your 1st contact. Let me run this by our team for further review and we will report back.

Sent from IBM Notes Traveler

Thank you,

Tom Yebernetsky
Sales Engineer
BRANDON ASSOCIATES
74 E Josie Drive
BELLEFONTE, PA 16823
MOBILE: 610-212-7774
FAX: 610-738-9554

Alfieri, Richard --- PAFS Foam Question ---

From: "Alfieri, Richard" <rich.alfieri@philips.com>
To: tyebernetsky@brandonsales.com, carl@polytechinc.com
Date: Fri, Oct 30, 2015 10:51 AM
Subject: PAFS Foam Question

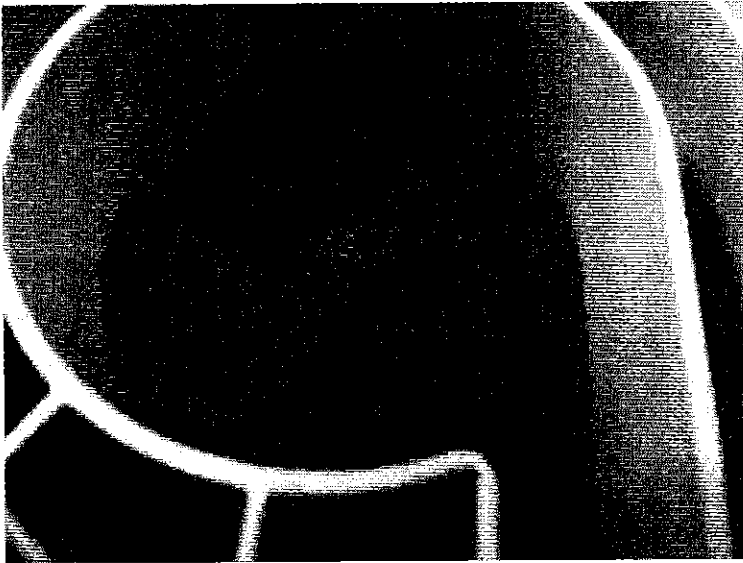
Hi Guys,

I was not sure who to direct this to, so I thought I would start with you two.

We use PAFS-038-BUL4 foam in one of our products and have been for years now. I recently received a message from a customer that the foam was degrading over time. They claim that over the course of up to 5 years, the foam begins to look like the photo below.

I have never seen this happen to foam we have here and believe it is more likely caused by exposure to some chemical – possibly a cleaning solution.

1. Have you ever seen this occur to the foam?
2. Any suggestions as to what may cause this?
3. Are there any chemicals or possibly ozone that are used for cleaning and disinfecting that you are aware of that can cause this?



Thanks,

Rich

Rich Alfieri
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Eric Scott Thompson

From: Testa, Vincent <vince.testa@philips.com>
Sent: Thursday, May 24, 2018 7:57 AM
To: Bob Marsh
Cc: Bonnie Peterson; Rob Mays; Tom Yebernetsky
Subject: RE: PAFS Deterioration

Hi Bob,

Thanks for the prompt response.

Regards,
Vince

From: Bob Marsh [mailto:bobm@polytechinc.com]
Sent: Wednesday, May 23, 2018 11:35 AM
To: Testa, Vincent <vince.testa@philips.com>
Cc: Bonnie Peterson <bonnie@polytechinc.com>; Rob Mays <Rob@polytechinc.com>; Tom Yebernetsky <TYebernetsky@brandonsales.com>
Subject: RE: PAFS Deterioration

Vince,

The foamer is sure that as the foam deteriorates the FR properties diminish. There is no way to test to gauge to what extent, though.

Best Regards,
BobM

From: Testa, Vincent [mailto:vince.testa@philips.com]
Sent: Wednesday, May 23, 2018 8:47 AM
To: Bob Marsh
Cc: Bonnie Peterson; Rob Mays; Tom Yebernetsky
Subject: RE: PAFS Deterioration

Hi Bob,

As I mentioned we had a few complaints from customers stating that the foam was degrading in our device. We sent samples to a local lab for analysis. They concluded:

"The changes observed in the FTIR spectra collected from the returned samples, indicates an increase in bands that would result from a cleavage of the bonds in the base polymer. The physical characteristics of the foam, as observed in the SEM, with indications of embrittlement are consistent with cleavage as well. These results are consistent with an environmental exposure causing base polymer cleavage and embrittlement of the material."

Further investigation concluded that prolonged exposure to high humidity causes the foam to degrade.

The attached are images of:
01 – Foam installed

02 – Foam separating

03 – Foam degrading

As the foam degrades it breaks down into small particulate. A question has been raised regarding the flammability rating of the foam. Does it maintain its UL 94 Flame Resistance rating if it is broken down into particulate?

Thanks,

Vince

Vince Testa | Project Mechanical Engineer | Philips Home Healthcare Solutions | 1740 Golden Mile Hwy, Monroeville, PA 15146 | **NEW TELEPHONE:** 412.542.3802 | F: 724.733.5893 | vince.testa@philips.com

From: Bob Marsh [<mailto:bobm@polytechinc.com>]

Sent: Wednesday, May 9, 2018 1:56 PM

To: Testa, Vincent <vince.testa@philips.com>

Cc: Bonnie Peterson <bonnie@polytechinc.com>; Rob Mays <Rob@polytechinc.com>; Tom Yebernetsky <TYebernetsky@brandonsales.com>

Subject: RE: PAFS Deterioration

Correct

From: Testa, Vincent [<mailto:vince.testa@philips.com>]

Sent: Wednesday, May 09, 2018 1:51 PM

To: Bob Marsh

Cc: Bonnie Peterson; Rob Mays; Tom Yebernetsky

Subject: RE: PAFS Deterioration

Okay. So that's an ester based urethane that will have the same humidity sensitivities as the PAFS?

From: Bob Marsh [<mailto:bobm@polytechinc.com>]

Sent: Wednesday, May 9, 2018 1:29 PM

To: Testa, Vincent <vince.testa@philips.com>

Cc: Bonnie Peterson <bonnie@polytechinc.com>; Rob Mays <Rob@polytechinc.com>; Tom Yebernetsky <TYebernetsky@brandonsales.com>

Subject: RE: PAFS Deterioration

Vince,

We supply Paramount our PRF-S60 foam for them to fabricate the 1025406 (MPAP FILTER ELEMENT) part that you have designated as PRF-60ZSIF.

Thanks,

BobM

From: Testa, Vincent [<mailto:vince.testa@philips.com>]

Sent: Wednesday, May 09, 2018 11:16 AM

To: Bob Marsh; Bonnie Peterson

Cc: Rob Mays; Tom Yebernetsky

Subject: RE: PAFS Deterioration

Bob,

Thank you for the information. I'm sure I'll have more questions. But first, can you verify which foam the 1025406 (MPAP FILTER ELEMENT) is?

Thanks,
Vince

From: Bob Marsh [mailto:bobm@polytechinc.com]
Sent: Tuesday, May 8, 2018 7:21 AM
To: Testa, Vincent <vince.testa@philips.com>; Bonnie Peterson <bonnie@polytechinc.com>
Cc: Rob Mays <Rob@polytechinc.com>; Tom Yebernetsky <TYebernetsky@brandonsales.com>
Subject: RE: PAFS Deterioration

Vince,

Please see the reply from the manufacturer (indented below).

PRF-S is ester foam. PRF-T is an ether foam.

PHU is high density polyurethane foam that is an ether and ester blend.

I am unable to answer Question Number 1. We would not recommend using **polyester** foam in such an environment and have no direct data to use to calculate the rate of hydrolysis. **Polyether** foam lifetime would not be expected to reduce significantly at the stated conditions. Use with pure oxygen could shorten the lifetime some by promoting more rapid oxidation. I do not know the extent of the reduction, but do not expect it to be overly significant.

Polyester foam will lose tensile strength and overall integrity as it hydrolyzes. It will eventually decompose to a "sticky" powder. That will happen very rapidly at 40°C, 95% R.H.

Best Regards,
BobM

From: Testa, Vincent [mailto:vince.testa@philips.com]
Sent: Thursday, May 03, 2018 1:33 PM
To: Bob Marsh; Bonnie Peterson
Cc: Rob Mays; Tom Yebernetsky
Subject: RE: PAFS Deterioration

Hi Bob,

Thank you for the response. We are evaluating our options regarding the foam. We could switch to the PAF, or we could indicate a preventive maintenance cycle in which they would replace the PAFS foam pieces. Fortunately, the foam is easily accessible. To that point, I need more information about the PAFS foam. The datasheet states the estimated service life is a minimum 10 years at 27°C (80°F) and 95% R.H. The environmental conditions for our device is a maximum of 40°C and 95% R.H. Note the difference in temperature.

1. Please ask your foam supplier to calculate the service life based on this higher temperature (40°C vs. 27°C).
 - a. It would also be useful if they could provide a graph depicting failure over time. For example, if tensile strength reduced over time, they would plot strength vs. time.

2. At the end of the service life, what is the failure mode of this material?

We use two other types of foam in our device.

1. 1025406 (MPAP FILTER ELEMENT) is PRF-60ZSIF-040. I could not find a data sheet on your website for PRF, but I did find PRF-S (ester based urethane) and PRF-T (polyether polyurethane). Which is it?
2. 1036705 (MMV, Capacitor/Battery Foam) is PHU-40-025-L4. I could not find a data sheet on your website for PHU. What is this material?

Thank you,

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From: Bob Marsh [<mailto:bobm@polytechinc.com>]
Sent: Wednesday, May 2, 2018 3:40 PM
To: Testa, Vincent <vince.testa@philips.com>; Bonnie Peterson <bonnie@polytechinc.com>
Cc: Rob Mays <Rob@polytechinc.com>; Tom Yebernetsky <TYebernetsky@brandonsales.com>
Subject: RE: PAFS Deterioration

Vince,

Thanks for sharing the test results with us. It is good to have that comparison to reinforce that ester foams are not the best option for elevated humidity/heat environments.

Our suggestion is for you to make the switch to the ether (PAF) foam as soon as you can roll the change in. We are able to support the change as soon as you can make it happen.

Our foam supplier does not think that the presence of higher than ambient oxygen would hasten the deterioration. The high temperature and humidity are the factors contributing to the ester foam deterioration.

Best Regards,
BobM

From: Testa, Vincent [<mailto:vince.testa@philips.com>]
Sent: Friday, April 27, 2018 1:52 PM
To: Bonnie Peterson
Cc: Bob Marsh; Rob Mays; Tom Yebernetsky
Subject: RE: PAFS Deterioration

Hi Bonnie,

I was not involved with the 2016 investigation, but I did follow up with Rich Alfieri. He previously sent some samples of the PAFS foam to our Technical Expert Group in Drachten, The Netherlands. They performed several tests including an environmental test performed at 90°C and 100% humidity. After 7 days, the foam started to disintegrate. They noted that polyester urethanes “show bad resistance against high humidity in combination with high temperature.”

A few months later, he sent samples of the PAF foam. They repeated the testing and concluded, “contrary to polyester urethane foams, polyether urethane foams show a far better resistance against high humidity at high temperature. Some degradation is observed, as can be seen from the weight loss, color change and change in pH and conductivity, but it happens only slowly and gradually.”

In summary, the PAF (polyether urethane) shows better resistance to environmental breakdown than the PAFS (polyester urethane).

The datasheets on the Polymer Technologies website state “Excellent” humidity resistance for both materials and a service life of 10 years. Although the datasheets read quite similarly, our experience suggests there is a substantial difference between these materials.

Material	Humidity Resistance	Service Temperature	Estimated Service Life
PAF	Excellent; no significant decrease in tensile strength or elongation after 5 hrs. of steam autoclave at 250°F (121°C) per ASTM D3574-86, Test J.	Continuous -45°F (-43°C) TO 212°F (100°C) Intermittent 250°F (121°C)	Min. 10 years at 80°F (27°C) and 95% R.H.
PAFS	Excellent. No significant decrease in T.S. and elongation after 5 hours of steam autoclaving at 121°C (250°F) per ASTM D3574-91, Test J.	43°C (-45°F) to 109°C (225°F) continuous up to 138°C (280°F) intermittent	Minimum 10 years at 27°C (80°F) and 95% R.H.

Thank you,

Vince Testa
Project Mechanical Engineer
Philips Home Healthcare Solutions
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vince.testa@philips.com

From: Testa, Vincent
Sent: Tuesday, April 24, 2018 2:28 PM
To: 'Bonnie Peterson' <bonnie@polytechinc.com>
Cc: Bob Marsh <bobm@polytechinc.com>; Rob Mays <Rob@polytechinc.com>; Tom Yebernetsky <TYebernetsky@brandonsales.com>
Subject: RE: PAFS Deterioration

Hi Bonnie,

Thanks for the information. Look forward to hearing back from your material supplier.

Regards,

Vince Testa
Project Mechanical Engineer
Philips Home Healthcare Solutions
1740 Golden Mile Hwy
Monroeville, PA 15146

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F: 724.733.5893
vince.testa@philips.com

From: Bonnie Peterson [<mailto:bonnie@polytechinc.com>]
Sent: Monday, April 23, 2018 3:58 PM
To: Testa, Vincent <vince.testa@philips.com>
Cc: Bob Marsh <bobm@polytechinc.com>; Rob Mays <Rob@polytechinc.com>; Tom Yebernetsky <TYebernetsky@brandonsales.com>
Subject: RE: PAFS Deterioration

Hi Vince,

We were contacted by Rich Alfieri in 2016 for this same issue. The attached was the response we provided at that time; we did send samples of PAF (ether based) but did not hear about the results and have continued to supply the PAFS. We reached out again to our material supplier with the additional info you provided below and will get back to you.

Thanks,
Bonnie

Bonnie Peterson
Project Manager
Polymer Technologies, Inc
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From: Testa, Vincent [<mailto:vince.testa@philips.com>]
Sent: Friday, April 20, 2018 3:06 PM
To: Bonnie Peterson <bonnie@polytechinc.com>
Subject: PAFS Deterioration
Importance: High

Hello Bonnie,

Over the past few years you've helped me with technical questions regarding your foam. Now I have an issue that I'm hoping you can help me resolve. We use the PAFS foam in the air path of our Trilogy family of ventilators as a means for noise reduction (drawings attached). Recently we've received a few complaints from our customers that the foam is disintegrating (images attached, these are separate parts). To me it appears as if the open cell foam is disintegrating. The material sheds and is pulled into the ventilator air path. As you can imagine, this is not a good situation for our users.

I'm wondering what could cause this material to break down. The specification sheet says it has excellent resistance to heat, moisture and chemicals. We do not recommend or specify any means to clean or disinfect this foam. In fact, our device is designed such that these components can be replaced by the customer. Other than room air the only other elements this foam is exposed to normally are isopropyl alcohol and pure oxygen.

- Isopropyl alcohol – To ease the insertion of the 1044528 into the 1035281 assembly, the vertical walls of the plastic are swiped with alcohol to keep the L4 adhesive from sticking. This is done at our supplier. Note, no alcohol is used in the presence of the 1044529 foam, and these two pieces of foam do not come into contact with each other until final assembly at our facility (well long after the alcohol would have evaporated).
- Oxygen – Pure oxygen can be ported into the device. It comes into direct contact with both pieces of foam.

Any guidance would be appreciated. We should be able to provide samples if desired. I flagged this message with high importance since we are addressing a potential safety concern.

Thank you,

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